REMARKS

I. Status of the Claims and the Rejections

Claims 11 and 22 were rejected under 35 U.S.C. § 112, first paragraph, for allegedly failing to comply with the written description and enablement requirements. As to the written description requirement, applicant has amended claims 11 and 22 to remove the problematic claim element "continuously." Applicant has also submitted a Declaration of the inventor Thomas Lerche explaining why claims 11 and 22 meet the enablement requirement. Each of these Section 112 rejections is discussed in further detail below.

Substantively, claims 3, 5, 8, 9, 11, and 22 were rejected for alleged obviousness under 35 U.S.C. § 103(a) based on McCallister U.S. Patent No. 2,859,803 ("McCallister") in view of Japanese Patent No. 60126536 ("JP '536"). Claim 10 was rejected for alleged obviousness under 35 U.S.C. § 103(a) based on McCallister in view of JP '536 and Hutton U.S. Patent Publication No. 2004/0187234 ("Hutton").

Applicant respectfully traverses these rejections. However, applicant has amended independent claims 11 and 22 to further clarify the subject matter regarded as patentable. In view of these amendments and the following remarks, applicant respectfully requests reconsideration and allowance.

II. Claims 11 and 22 comply with the Written Description and Enablement Requirements

The Office Action states that claims 11 and 22 fail to comply with the written description requirement under 35 U.S.C. § 112, first paragraph, because the claims recite that the angle of the air jet directed into the cabin is "continuously variable." The objection to the term "continuously" appears to imply that this claim term infers continuous variability in time.

Applicant respectfully submits that the term "continuously variable" is well understood in the aircraft art to refer to a stepless variation. To clarify the intended scope of claims 11 and 22, applicant has now amended these claims to recite that the angle of the air jet is steplessly variable. These amendments are fully supported in the specification at page 5, lines 10-20.

For at least these reasons, claims 11 and 22 comply with the written description requirement of Section 112, first paragraph. Applicant respectfully requests that the rejection of claims 11 and 22 based on the written description requirement be withdrawn.

The Office Action states that the claims 11 and 22 fail to comply with the enablement requirement under 35 U.S.C. § 112, first paragraph, because it is allegedly unclear from the description in the specification how to make or use a single structure to alter both the direction and the impulse of the air jet based on a single temperature sensor (the claims do not specify whether a single structure or multiple structures are used to alter the direction and impulse of the air jet). Applicant disagrees with this assessment in the Office Action. One of skill in the art would understand from the disclosure in the specification how to make and use both a single structure or multiple structures to alter the direction and the impulse of the air jet.

To further explain this position, applicant has attached a declaration of Thomas Lerche, the named inventor of the present application, which declares that a person of skill in the art would have been able to make and use the claimed inventions to change an angle and a cross-section of an outlet of a guide pipe using a single structure or multiple structures. More particularly, Mr. Lerche states that one skilled in the art would be aware of prior patents and publications such as those currently of record in the current application when understanding the specification of the current application. Mr. Lerche cites George U.S. Patent No. 4,848,669 ("George") for the teaching of a single mechanism for altering direction and impulse of an air

flow, and also cites Holyoake U.S. Patent No. 5,556,335 ("Holyoake") for the teaching of multiple mechanisms for altering direction and impulse of an air flow.

As an example of a single structure for altering direction and impulse of an air flow, George discloses a rotating ball-joint mechanism including a plurality of air-flow passageways therethrough. The ball-joint mechanism of George may be placed in a rotatable guide pipe like the guide pipe described in the current application. Rotating the guide pipe with respect to the ball-joint member may cause a change in angle of air passing through the guide pipe. Rotating the guide pipe may also cause the guide pipe to partially or completely occlude some of the air-flow passageways in the ball-joint member, which will cause a change in the impulse of the air passing through the guide pipe. Consequently, one skilled in the art would readily understand from George and the current specification how to make and use the claimed device or practice the claimed method with only a single structure for altering the direction and impulse of the air jet.

As an example of multiple structures for altering direction and impulse of an air flow, Holyoake discloses a baffle within an outlet pipe that may be moved axially to change direction or impulse of an air jet. Thus, a baffle may be positioned adjacent the rotatable guide pipe like the guide pipe described in the current application. In a first position of the guide pipe, the baffle may partially occlude the outlet of the guide pipe to affect the impulse of the air jet emitted from the guide pipe. The guide pipe may be rotated to a second position where the baffle occludes less of the outlet. Thus, the guide pipe has changed the angle of the air jet, while the baffle has changed the impulse of the air jet. Consequently, one skilled in the art would readily understand from Holyoake and the current specification how to make and use the claimed

device or practice the claimed method with multiple structures for altering the direction and impulse of the air jet.

For at least these reasons, the current specification would enable one skilled in the art in view of George, Holyoake, and other references of record to make or use the claimed invention. Applicant observes that the claims currently recite that a temperature sensor affects the altering of the direction and the impulse of the air jet, but does not limit the recited device or method to using a single structure or multiple structures for altering the direction and the impulse of the air jet. Applicant does not intend to limit the claims to either possibility, and respectfully asserts that both possibilities are fully enabled as explained by these remarks and the declaration of Mr. Lerche. Thus, applicant respectfully requests that the rejection of claims 11 and 22 based on the enablement requirement be withdrawn.

III. Claims 3, 5, 8-11, and 22 are Not Obvious

A. The Claims

Independent claim 22 recites a device for air-conditioning an aircraft cabin including a rotation device, a guide pipe, and a temperature sensor having a temperature-dependent form. The temperature sensor operates to measure the temperature of an air jet injected into the cabin through the guide pipe, actuate rotation of the rotation device to alter an angle of the air jet with respect to a vertical direction, and alter an impulse of the air jet by actuating a change in the cross-section of an outlet in communication with the guide pipe. The angle of the air jet is steplessly variable within a range of 10-90 degrees based on a change in form of the temperature sensor. Claims 8-10 depend from claim 22 and recite additional features, such as a second temperature sensor in claim 10.

Independent claim 11 recites an analogous method for air-conditioning an aircraft cabin. The method includes directing at least one air jet into the cabin with a guide pipe and measuring the temperature of the air jet with a temperature sensor having a temperature-dependent form. The method also includes altering an angle of the air jet with respect to a vertical direction via rotation of a rotation device according to a change of form of the temperature sensor such that the angle of the air jet is steplessly variable within a range of 10-90 degrees. An impulse of the air jet is also altered according to the change of form of the temperature sensor by changing a cross-section of an outlet in communication with the guide pipe. Claims 3 and 5 depend from claim 11 and recite additional features, such as increasing the impulse of the air jet when the temperature of the air jet is increased.

B. The Deficiencies of the Cited Prior Art

McCallister is directed to a seating arrangement for a passenger cabin and discloses directing fresh air into the passenger cabin through fresh air outlets (13) in the ceiling of the passenger cabin. *See* FIG. 2. However, McCallister fails to disclose measuring the temperature of the air jet, altering the angle of the air jet, or altering the impulse of the air jet. The Office Action instead cites JP '536 for these claimed features, and states that it would have been obvious to modify the air-conditioning device and method of McCallister as taught by JP '536 to arrive at the claimed invention. However, this combination is deficient because the proposed combination does not include every limitation of independent claims 11 and 22.

JP '536 is directed to a ventilation control device for an air conditioner typically used in a building. As shown in FIGS. 1 and 2, the ventilation control device includes an airflow guide plate (2) coupled to a first temperature-sensitive shape memory alloy (7) and a rotary member (4) coupled to a second temperature-sensitive shape memory alloy (10). The first

temperature-sensitive shape memory alloy is operable during heating to move the guide plate in an axial direction to increase or decrease a cross-sectional area of an outflow in response to temperature changes. The second temperature-sensitive shape memory alloy is operable during heating to rotate the rotary member and the guide plate to direct the hot air flow in a downward direction, and operable during cooling to rotate the rotary member and the guide plate to direct the cool air flow in a generally horizontal direction. Consequently, JP '536 discloses a device for modifying the flow of conditioned air into a building.

However, the guide plate is not rotated unless the air conditioner is changing operation between heating and cooling the building. In this regard, the second temperature-sensitive shape memory alloy is binary in operation, moving from the generally horizontal air flow position of FIG. 1 to the generally vertical air flow position of FIG. 2 in one movement when the operation mode of the air conditioner changes. Therefore, JP '536 does not teach stepless variation of the angle of the air jet (between 10 and 90 degrees), as recited in claims 11 and 22. As such, the proposed combination of references is deficient with respect to claims 11 and 22.

Furthermore, JP '536 discloses that the first temperature-sensitive shape memory alloy does not become active to move the air flow guide plate laterally until the temperature of the air flow increases beyond the temperature at which the second temperature-sensitive shape memory alloy has caused the full rotation of the rotary member and the guide plate to the generally vertical position. In other words, the rotation of the rotary member and the translation of the guide plate are never actuated at the same time. However, independent claims 11 and 22 each require that when the temperature sensor measures the temperature of an air jet and undergoes a corresponding change in temperature-dependent form, the angle and the impulse of

the air jet are modified by actuation of the rotation device and an outlet according to the change of form. Thus, JP '536 does not teach the method of claim 11 or the device of claim 22.

In an aircraft, passengers are seated much closer to air outlets than in a normal building space (as envisioned by the JP '536 system). Thus, the temperature of air flowing from the outlets in an aircraft may be much more finely tuned than the temperature of air flowing into a building. To this end, the arrangement of two different temperature sensing alloys actuating at different ranges of temperatures as disclosed in JP '536 would not be desirable in an aircraft. In situations where the temperature of the air jet is close to room temperature, normal fluctuations of the air jet temperature will cause the binary second temperature-sensitive shape memory alloy of JP '536 to oscillate the air flow between horizontal and vertical directions constantly. Additionally, when the air jet begins to deliver heating air to the passenger cabin, the first temperature-sensitive shape memory alloy may not be activated immediately, which causes hot air to reach only the heads of the passengers, leaving the passengers' feet cold.

Both of these operating outcomes (constant oscillation between vertical and horizontal air flow and inadequate heating air flow to the feet of passengers) cause discomfort to passengers. As such, one of ordinary skill in the art would not be led to modify the air conditioning system of McCallister with the features of JP '536. For at least this additional reason, the proposed combination is deficient.

Independent claims 11 and 22 are not obvious over McCallister and JP '536 because one of ordinary skill in the art would not have made such a combination, and the proposed combination lacks multiple features currently recited in the claims. Claims 3, 5, and 8-10 depend from one of independent claims 11 and 22, and recite one or more features in combination with the features of claim 11 or 22. For substantially the same reasons set forth

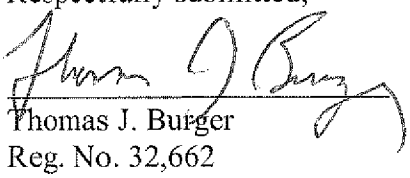
with respect to claims 11 and 22, and further because the cited references fail to teach the combination of elements recited in the dependent claims, applicant requests that the rejection of claims 3, 5, 8-11, and 22 be withdrawn.

IV. Conclusion

Based on the amendments to the claims and these remarks, applicant respectfully asserts that all present claims are in condition for allowance, and respectfully requests an allowance without further delay.

It is believed that no fee is due for this filing, other than a fee for a one-month extension of time. If any other fee is considered necessary, the Commissioner may treat this response as an authorization to charge Deposit Account 23-3000.

Respectfully submitted,



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